

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

MURRAY WALTER PISONY,
Plaintiff,

v.

COMMANDO CONSTRUCTION, INC.
Defendant.

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Civ. A. No. 6:17-cv-00055-RP-JCM

JURY DEMANDED

DECLARATION OF DR. JAHAN RASTY

I hereby declare as follows:

1. I have been asked by counsel for Plaintiff Murray Pisony (“Plaintiff” or “Pisony”) to offer my opinions regarding claim construction for certain terms.

2. In connection with the preparation of this Declaration, I have reviewed the materials listed below:

- U.S. Patent No. 7,591,629 (the “’629 Patent”);
- The file wrapper for the ’629 Patent;
- The parties’ respective claim constructions and identification of intrinsic and extrinsic evidence; and
- Any additional evidence cited herein.

3. All of the opinions stated in this Declaration are based on my personal knowledge and professional judgment. If called as a witness, I am prepared to testify competently about these opinions.

I. EXPERIENCE AND QUALIFICATIONS

4. My academic qualifications include bachelors, masters, and doctoral degrees in Mechanical Engineering (LSU), as well as a master degree in business administration (Texas Tech). My areas of expertise within mechanical engineering that are pertinent to the technical issues involved in this case include Machine Design, Dynamics, Manufacturing, and Solid Mechanics.

5. I am a registered professional engineer in the State of Texas and have been involved in mechanical engineering and related work for the past 37 years in various capacities including industry, national research and development laboratories, national research foundations, consulting, and academia.

6. For the past 30 years (since 1988), I have maintained continuous employment as a tenured full-professor at the department of Mechanical Engineering at Texas Tech University where I have taught 25 different courses at the graduate and undergraduate levels including, but not limited to, machine design, dynamics of motion, materials science, metallurgy, manufacturing, solid mechanics, statics, root-cause failure analysis, and forensic engineering.

7. I am also the director of the *Materials Performance and Failure Analysis Laboratory* at the Mechanical Engineering Department at Texas Tech University where I have been involved as the Principal and/or Co-Principal Investigator of more than \$7.4 million in research grants from various industries, government agencies, national funding agencies, and national research laboratories.

8. Over the past 24+ years, I have also served as the president & CEO of Real-World Forensic Engineering, LLC, which is a consulting firm specializing in engineering consulting, root-cause failure analysis, and intellectual property work. In this capacity, I have been involved

in more than 1000 engineering consulting and research projects in the areas of mechanical design, testing, failure analysis, and intellectual property including patent infringement, trade secret and breach of confidentiality issues. I have testified both in state and federal courts, as well as in depositions on behalf of both plaintiff's (60%) and defendants (40%).

9. A true and correct copy of my curriculum vitae is reproduced as Exhibit A hereto.

10. I am being compensated for my work in this matter on an hourly basis and this compensation is in no way dependent on the outcome of the litigation.

II. LEVEL OF ORDINARY SKILL IN THE ART

11. A person of ordinary skill in the art at the time of the filing of the '629 Patent would typically have at least a Bachelor's Degree in Mechanical Engineering or equivalent work experience, along with knowledge of mechanical design.

III. CLAIM CONSTRUCTION STANDARDS

12. I have been instructed that the following standards apply to claim construction.

13. The words of a claim are to be given the plain and customary meaning that a person of ordinary skill in the art would have understood the claim language to have, as of the effective filing date of the patent application, in light of the claims, specification, and prosecution history. The person of ordinary skill in the art is deemed to have read the claim term in the context of the entire patent.

14. There is a heavy presumption that a claim term carries its plain and ordinary meaning, and that a court need not construe a term, particularly when the plain and ordinary meaning of the term is sufficient. Instead, claim construction is necessary only when the meaning or scope of technical terms is unclear. A departure from the ordinary and customary meaning is the exception, not the rule. There are only two exceptions to this general rule: 1) when a patentee

sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution.

15. A court should derive the meaning of a claim term by looking to the intrinsic evidence of record i.e. the claim language, specification, and prosecution history. The intrinsic record also includes prior art cited in a patent or cited in the prosecution history of the patent. Claim construction always begins with the language of the claims themselves and guides the court's construction of claim terms. The context in which a term is used in the asserted claim can be highly instructive. Other claims, asserted and unasserted, can provide additional instruction because terms are normally used consistently throughout the patent. Differences among claims, such as additional limitations in dependent claims, can provide further guidance. The presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim. Where the limitation that is sought to be read into an independent claim already appears in a dependent claim, the doctrine of claim differentiation is at its strongest. It is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.

16. Aside from the intrinsic evidence, the Court may also consult extrinsic evidence, which is all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises. Extrinsic evidence can shed useful light on the relevant art, but is less significant than the intrinsic record in determining the legally operative meaning of disputed claim language.

IV. OPINIONS REGARDING SPECIFIC TERMS

A. Claim 1: “Extendible Mast”

17. Plaintiff proposes that this phrase be construed as “a structural support member capable of raising and lowering.”

18. The “extendible mast” of Claim 1 is a structure that provides support, as indicated in Plaintiff’s proposed construction. If the “extendible mast” must be able to “drive the frame about the pivotal connection” and be “operable to drive adjustment of the angle of the frame relative to the chassis to select the approach angle for the conveyor relative to the stacking assembly,” it must necessarily act as a support for these elements of the apparatus of Claim 1.

19. Merriam-Webster, for example, defines the noun “support” as “a structure that holds up or serves as a foundation for something else.” *See* Support: <https://www.merriam-webster.com/thesaurus/support> (last visited July 2, 2018).

20. In nautical applications, for example, the purpose of a mast on a ship is to carry the sail. *See, e.g.,* http://www.academia.edu/12096484/Dictionary_of_Nautical_Words_and_Terms (last visited 7/16/2018). On a ship, in order to function, the mast needs to be vertical to support the sail and capture the energy of the wind, which moves horizontally into the sail.

21. The purpose of the “extendible mast” in Claim 1 of the ’629 Patent is completely different, i.e., it need only be able to “drive the frame about the pivotal connection” and be “operable to drive adjustment of the angle of the frame relative to the chassis to select the approach angle for the conveyor relative to the stacking assembly.” *See* ’629 Patent, Claim 1. This angular adjustment can be done, in part, through the raising and lowering of the conveyor assembly as

described in the specification. *See* '629 Patent, col. 2, ll. 39-41; col. 3, ll. 18-20; col. 10, ll. 20-30 and 43-45.

22. The “extendible mast” of Claim 1 is, therefore, only limited in that it must be capable of performing the specified functions. There is nothing in the language of Claim 1 that requires, implies, or in any way suggests a limitation on the orientation of the “extendible mast.”

23. The “extendible mast” of Claim 1 could be accomplished in a number of ways and it would not be restricted to a vertical pole, as proposed by CCI. For example, the “extendible mast” could have been motorized in any number of ways, including with a cogged gear, threaded shaft, or hoist mechanism.

24. As one of ordinary skill in the art, it is my opinion that the “extendible mast” need not increase in length in order to be extendible.

25. It is my opinion, as a person of ordinary skill in the art, that in order to be “extendible,” the mast of Claim 1 has to be capable of raising and lowering.

26. In Figure 2 of the '629 Patent, the extension arm (labeled 28) “extends between” the grapple (labeled 30) and the working arm (labeled 26), i.e., the extension arm reaches and stretches between the grapple and the working arm. This use of the word “extend” as to the mechanical arm in the '629 Patent is similar to that of the human arm. '629 Patent col. 4, ll. 55-56 and Figure 2. The human arm extends in various directions and moves, stretches, and reaches at various angles but does not actually increase in length. This usage of the word “extend” is also consistent with the extrinsic evidence cited by Plaintiff, with regard to the use of and the meaning behind the words extend/extendible in the '629 Patent. Dictionary definitions show that the word “extend” can be defined as follows: “to spread or stretch forth . . . to cause to reach . . . to cause to

be of greater area . . . to stretch out in distance, space.” Extend: <https://www.merriam-webster.com/dictionary/extend> (last visited July 16, 2018).

27. As one of ordinary skill in the art, it is my opinion that the proper construction of “extendible mast” is as Plaintiff proposes: “a structural support member capable of raising and lowering.”

B. Claim 1- “the conveyor assembly includes ... *a pivotal connection for the frame to permit angular adjustment of the frame relative to the chassis*”

28. Plaintiff proposes that this phrase be accorded its plain and ordinary meaning.

29. As a person of ordinary skill in the art, I am readily able to understand the language of the following phrase proposed by CCI for construction: “the conveyor assembly includes ... *a pivotal connection for the frame to permit angular adjustment of the frame relative to the chassis.*” It is my opinion that this phrase should be given its plain and ordinary meaning.

30. I do not believe this phrase requires construction, in part, because the functional relationship of the components involved in the pivotal connection are clearly described later in the claims, i.e. “an extendible mast connected between the frame and the chassis to drive the frame about the pivotal connection.” See ’629 Patent, Claim 1.

31. To the extent a construction is required, as one of ordinary skill in the art, it is my opinion that the proper construction of “the conveyor assembly includes ... *a pivotal connection for the frame to permit angular adjustment of the frame relative to the chassis*” is as Plaintiff proposes: “a connection that permits angular movement of the frame relative to the chassis.” This construction stays true to and does not complicate the claim language by adding unnecessary words, phrases, or concepts.

32. From the standpoint of a person of ordinary skill in the art, it is clear that the pivotal connection described in the claims is *for* the frame and does not have to be *on* the frame.

C. Claim 6: “mast includes a hydraulic cylinder drivable to telescope to various lengths”

33. Plaintiff proposes that this claim language be accorded its plain and ordinary meaning.

34. As a person of ordinary skill in the art, I am readily able to understand the language of claim 6 proposed by CCI for construction.

35. Plaintiff’s proposed construction of Claim 6 (if one is required) substitutes the word “incorporates,” i.e. “mast incorporates a hydraulic cylinder drivable to telescope to various lengths.” This is consistent with my understanding as a person of ordinary skill in the art.

36. The word “includes” in the context of Claim 6 of the ’629 Patent is consistent with Merriam-Webster’s dictionary definition, i.e. “to comprise as part of a whole . . . to contain between or within. Include: <https://www.merriam-webster.com/dictionary/include> (last visited July 16, 2018). The usage of the word “includes” is also consistent with its synonym “incorporates,” as proposed by Plaintiff’s alternative-only construction. <https://www.merriam-webster.com/thesaurus/include> (last visited 7-9-2018).

37. It is common knowledge in the art, and in my opinion in the context of the ’629 Patent, that the nature and function of the piston within a hydraulic cylinder is to telescope to various lengths.

DATED: July 19, 2018.

A handwritten signature in black ink, appearing to read "Dr. Jahan Rasty", written in a cursive style.

Dr. Jahan Rasty

“EXHIBIT A”



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Professor Jahan Rasty, Ph.D., PE, MBA, CFEI, CFII

Tenured Full-Professor of Mechanical Engineering – TTU

Director of the *Materials Performance & Failure Analysis Laboratory* – TTU

Registered Professional Engineer, State of Texas, Certificate No. 71689.

SPECIALIZATION:

- Forensic Engineering Accident Investigation – TTU Program Director,
- Design & Manufacturing of Machines, Equipment and Mechanisms,
- Failure Analysis of Metals, Polymers and Composites, Metallurgy,
- Corrosion and Environmentally-Assisted Failures,
- Analysis of Dynamic Events: Collision, Impact, Fire and Explosion,
- Slips, Trips and Falls: Safety Standards in Premises Liability,
- Safety Engineering: Guarding and Warning Standards, Human Factors,
- Industrial Equipment Failures, Forensic Engineering Investigation

EDUCATION:

MBA, 1999:

College of Business Administration, Texas Tech University.

Ph.D., 1987:

Department of Mechanical Engineering, Louisiana State University (LSU).

Dissertation Title: "*Experimental and Finite Element Study of Residual Stresses Induced by Non-homogeneous, Large Deformation Manufacturing Processes: Application to Zircaloy-4(R) Nuclear Fuel Cladding and Oxygen-Free High Conductivity (OFHC) Copper Tubes.*"

**B.S./M.S.
1981/1984:**

Department of Mechanical Engineering, Louisiana State University (LSU).

Thesis Title: "*The Effect of Imperfect Contact Between Adjacent Layers on the Integrity of Multilayer Wrapped Pressure Vessels with Interlayer Gaps.*"

PROFESSIONAL AFFILIATIONS:

- The American Society of Mechanical Engineers (ASME) – Member
- The American Society of Safety Engineers (ASSE) – Member
- Society for Experimental Mechanics (SEM) - Member
- American Society of Materials (ASM International) – Member
- The Society of Automotive Engineers (SAE International) – Member
- Electronic Device Failure Analysis Society (EDFAS) – Member
- National Association of Fire Investigators (NAFI) – Member
- National Association of Corrosion Engineers (NACE) – Member
- Society of Automobile Engineers (SAE) International- Member
- International Iron & Steel Symposium 2015 (IISS) – Scientific Committee Member

PROFESSIONAL CERTIFICATIONS:

- 2014:** Successfully completed the National Association of Fire Investigators *Certified Fire & Explosion Investigator (CFEI) Certification* Course, July 21-24, 2014, Sarasota, FL.
- 2014:** Successfully completed the National Association of Fire Investigators *Certified Fire Investigation Instructor (CFII) Certification* Course, July 25, 2014, Sarasota, FL.
- 2007:** Successfully completed the Vetronix/Bosch approved standardized 8-hour *Crash Data Retrieval (CDR) Technician Certification* Course, September 9, 2007, North Las Vegas, NV.
- 2007:** Successfully completed the Vetronix/Bosch approved 32-hour Crash Data Retrieval (CDR) Data Analyst Course to qualify for individual *CDR System Operator Certification*, September 10-13, 2007, North Las Vegas, NV.

ACADEMIC ACHIEVEMENTS AND AWARDS:

- 2015:** Course Coordinator, Texas Tech University Department of Mechanical Engineering
- 2010:** Texas Tech University Edward E. Whitacre Jr. College of Engineering Honors Convocation – in recognition of receiving student nominations as a “Most Influential Professor” in 2009.
- 2002-05:** The American Society of Mechanical Engineers (ASME) International, Board of Governors – Served as the regional secretary.
- 2002:** The American Society of Mechanical Engineers (ASME) International, Board of Governors – in recognition for “valued service in advancing the engineering profession as Assistant Vice President for Education (1999-2001) and Vice Chair for Education (1998-1999).”

- 2002:** **Texas Tech American Society of Mechanical Engineers (ASME) Student Chapter Service Award** – in recognition of 13 years of service as the Faculty Advisor for the ASME chapter.
- 2001:** **The American Society of Mechanical Engineers (ASME) International Meritorious Service Award** – in recognition for his efforts in coordinating the Graduate Student Technical Conference (GSTC).
- 1993:** **Halliburton Education Foundation** Award of Excellence for Outstanding Achievement and Professionalism in Education, Research and Service,
- 1992:** **The American Society of Mechanical Engineers (ASME) International** Counsel on Member Affairs Award for outstanding contributions as the Faculty Advisor to the ASME Student Section at Texas Tech,
- 1992:** **Ralph Teetor** award for education/research, Society of Automotive Engineers,
- 1991:** **The American Society of Mechanical Engineers (ASME) International** Board of Governors award for valued services in advancing the engineering profession.
- 1990:** **Halliburton Education Foundation** Award of Excellence for Outstanding Achievement and Professionalism in Education, Research and Service,
- 1989:** **Alcoa Foundation** Grant Award for Excellence in Research,
- 1986:** **American Public Works Association (APWA)** Grant Award,
- 1984-87:** **Kaiser Aluminum** and Chemical Company Fellow in Materials Science,

WORK EXPERIENCE:

1986-Present: Real-World Forensic Engineering

President

Performed engineering analysis and provided expert witness testimony and consulting services in the areas of Forensic Engineering, Mechanical Design, Failure Investigation, Stress Analysis, Materials Characterization/Testing, and Experimental Engineering Analysis for a number of local as well as national corporations.

1/85-7/85: ETHYL Corp., Baton Rouge, Louisiana.

Project Engineer

Evaluated the stresses and displacements of reactor vessels under operating conditions and recommended modifications in the design of the vessels. Analysis was conducted using the existing theoretical solutions. In addition, ANSYS Finite Element Program was utilized to verify the theoretical results. Due to complex geometry of reactor parts being analyzed, extensive experience in modeling of mechanical parts with complex geometry and boundary conditions was obtained.

ACADEMIC AND PROFESSIONAL EXPERIENCE:

Director, Materials Performance and Failure Analysis Laboratory.

Director, Applied Forensic Engineering Graduate Certificate Program. (December 15, 2015 - Present).

Applied Forensic Engineering Graduate Certificate Program

2008-Present **Full-Professor**, Department of Mechanical Engineering, Texas Tech University
1993-2008: **Associate Professor**, Department of Mechanical Engineering, Texas Tech University
1988-1993: **Assistant Professor**, Department of Mechanical Engineering, Texas Tech University

Taught and Developed (**) the Following Undergraduate and Graduate Courses:

- 1) Mechanics of Solids, ME 3403
- 2) Mechanics of Solids (ME 3464, Mechanics II)
- 3) Principles of Failure Analysis & Forensic Engineering (**), TTU-ME 4342
- 4) Mechanical Metallurgy (**), TTU-ME 4343
- 5) Materials Science, TTU-ME 2311
- 6) Statics, TTU-ME 2464
- 7) Measurements & Instrumentation Laboratory – ME 3218
- 8) Materials and Mechanics Laboratory, TTU-ME 3328
- 9) Materials in Design (**), TTU-ME 4341
- 10) Manufacturing Processes (**), TTU-ME 4344
- 11) Dynamics, TTU-ME 3331
- 12) Introduction to Machine Design, TTU-ME 3364
- 13) Machine Component Design, TTU-ME 3365
- 14) Advanced Topics in Mechanical Engineering: Safety Engineering, 1 course, ME 4330
- 15) , Individual Study in Mechanical Engineering: Energetic Material Combustion I, 3 courses, ME 4331
- 16) Mechanical Systems Laboratory, TTU-ME 4252
- 17) Applied Mechanics (**), TTU-ME 4362
- 18) Senior Design-I, TTU-ME 4370
- 19) Senior Design-II, TTU-ME 4371
- 20) Individual Studies, TTU-ME 4331
- 21) Fracture and Failure Analysis (**), TTU-ME 5342 (graduate)
- 22) Foundations of Solid Mechanics (**), TTU-ME 5352 (graduate)
- 23) Plasticity and Viscoelasticity (**), TTU-ME 5353 (graduate)
- 24) Theory of Thermal Stresses (**), TTU-ME 5344 (graduate)
- 25) Deformation Mechanics (**), TTU-ME 5331 (graduate)
- 26) Dislocation Mechanics (**), TTU-ME 5343 (graduate)
- 27) Master's Thesis, 11 courses, ME 6300 (graduate)
- 28) Master's Report, 9 courses, ME 6301 (graduate)
- 29) Legal Principles in Forensic Science & Engineering (**), TTU-ME 6330 (graduate)

PROFESSIONAL DEVELOPMENT COURSES:

- 2016:** Attended a full day workshop sponsored by NAFE “*Application of Engineering in the Jurisprudence System*”, presented by NAFE, June 25, 2016, Dallas, TX
- 2016:** Attended a full day Seminar “*Structural Forensic Engineering*”, presented by Jarrod C. Burns, M.S., P.E., January 25, 2016, Lubbock, TX

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- 2009:** Attended a full day workshop and hand-on training course for “***Safe Operation of Forklifts***”, presented by office of Environmental Health and Safety, Texas Tech University, May 2009, Lubbock, TX.
- 2008:** Attended a 1½ day workshop on “***Intellectual Property in the 21st Century***”, given by Raymond Van Dyke, Esq., an intellectual property attorney from the law firm of Winston & Strawn, LLP, in Washington D.C., April 11-12, 2008, Texas Tech University.
- 2007:** Attended a workshop sponsored by ABAQUS Corporation on “***Computer Aided Modeling and Application of Finite Element Method to Fracture and Failure Analysis***”, May 11-12, Dallas, TX.
- 2006:** Attended a workshop sponsored by ABAQUS Corporation on “***Computer Aided Modeling and Application of Finite Element Method to Fracture and Failure Analysis***”, May 11-12, Dallas, TX.
- 2002:** Attended the American Society of Mechanical Engineers (ASME International) Management Training Seminar, August 10, 2002, San Antonio, TX.
- 1997:** Successfully completed a course on “***Interpersonal Skills***” at the ASME Region X Management Training Seminar held, April 4-5, 1997, Arlington, TX.
- 1997:** Successfully completed a course on “***Multiscale Modeling of Polycrystal Plasticity***” at the Institute for Mechanics and Materials Seminar, April 9-11, 1997, San Diego, CA.
- 1993:** Successfully completed a course on “***Teaching Effectiveness***” presented at the National Effective Teaching Institute's workshop held at the University of Illinois at Urbana-Champaign, June 24-26, 1993.
- 1990:** Successfully completed a course on “***Probabilistic Structural Analysis Methods and NESSUS Workshop***” presented by the Southwest Research Institute, San Antonio, Texas, April 16-20, 1990.
- 1989:** Successfully completed a course on “***Integrated Learning System - Improving Engineering Education***,” Presented by Dr. K.J. Williamson, and P.K. Hurt, in a teaching effectiveness workshop held at Texas Tech University.
- 1988:** Successfully completed a course on “***Creating Creative Engineers***”, presented at the National Effective Teaching Institute's workshop held at North Carolina State University, June 11-13, 1988.
- 1984:** Successfully completed a course on “***Teaching Effectiveness***” presented by Professor James E. Stice, at the Center for Teaching Effectiveness Workshop, held at Louisiana State University, March 15-17, 1984.

ENGINEERING RESEARCH & PROJECT MANAGEMENT EXPERIENCE:

1988-Present: Department of Mechanical Engineering, Texas Tech University, Lubbock, TX

Funded Research:

Served as the PI and/or Co-PI of 27 research projects (listed below) with a total funding of \$7,478,820 (Other non-funded research projects are not listed).

- 1) Rasty, J. (Principal), "Curriculum Modules for Nuclear Eng.: Corrosion and Radiation Effects on Electronic Materials," Sponsored by NRC/University of Kansas, Federal, \$25,000.00. (April 1, 2012 - March 30, 2014).
- 2) Maxwell, T. (Co-Principal), Tate, D. (Principal), Rasty, J., "Study and Improve the Hall Pump," Sponsored by T&B Financial Services, \$13,939.00. (September 2010 - December 2011).
- 3) Principal-Investigator: "Experimental and Finite Element Characterization of Residual Stresses", Funded by AFOSR/Lockheed Martin/Boeing PCC 02 KY4111 F/A-22 Program, \$5,000, 8/6/2007 – 5/31/2007.
- 4) Principal-Investigator: "Property Characterization of Biodegradable Insulation Material," Funded by MXT Corp., \$3,956, 03/13/2006 – 3/13/2007.
- 5) Principal-Investigator: "Development of Residual Stress Measurement Standards for Machining-Induced Distortion Failures", Funded by Los Alamos National Laboratory, \$37,926, 01/15/2006 – 12/31/2006.
- 6) Principal-Investigator: "Numerical Analysis of High-Cycle Fatigue with Probabilistic Failure." Funded by Alpha Star Corporation, \$170,000, 6/1/2005 – 5/31/2006.
- 7) Principal-Investigator: "Effect of Dietary Lipids on Flexural Strength and Histomorphometry of Osteoporotic Animal Bone Models". Funded by Texas Tech Multidisciplinary Seed Grant Program, \$29,200, 4/01/2002- 8/01/2003.
- 8) Co-Investigator: "Two-year program extension, MURI-II, "Explosive-Driven Power Generation for Directed-Energy Munitions," Funded by Air Force Office of Scientific Research, \$2,000,000, 5/01/2001- 5/01/2003.
- 9) Co-Investigator: "MURI II, Explosive-Driven Power Generation for Directed-Energy Munitions," Funded by Air Force Office of Scientific Research, \$3,000,000, 5/01/98- 5/01/2001.
- 10) Principal-Investigator: "Materials Testing System", Instron Corp., \$27,320, 5/97.
- 11) Principal-Investigator: "Hydraulic Power Unit for Cold Expansion of Airplane Fuselage Rivet Holes", Womack Systems. L.C., \$925, 10/96.

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- 12) Principal-Investigator: "Improving Machining of Internally Stressed Components Through Model Predictive Control," Funded by the Pittsburgh Supercomputing Center, \$8,000 9/96-9/97.
 - 13) Principal-Investigator: "Improving Machining of Internally Stressed Components Through Model Predictive Control," Funded by the Pittsburgh Supercomputing Center, \$16,000 9/95-9/96.
 - 14) Principal-Investigator: "Effective Control of Distortion and Residual Stresses Induced by Rapid Quenching" Funded by the Advanced Technology Program (ATP), Texas Higher Education Coordinating Board, \$88,000, 1/96-1/98.
 - 15) Principal-Investigator: "Design and Construction of a Scale Model 400-Ton Mechanical Press for Manufacturing Expanded Metal Grating. Funded by EMI Inc., \$1,243, 8/94 - 12/94.
 - 16) Principal-Investigator: "Achieving Optimum Material Properties While Minimizing Distortions due to Rapid Quenching," Funded by the Center for Applied Automation and Research (CFAR), \$15,250, 11/93-11/94.
 - 17) Co-Investigator: "Effect of Thermal Cycling and Space Conditions on the High Voltage Flash-Over of Dielectrics", Funded by Defense Nuclear Agency (DNA), \$500,000, 1/93-1/94.
 - 18) Co-Investigator: "Design and Manufacturing of Multi-Layered Spherical Pressure Vessels Using the Integral Hydro-Bulge Forming Method", Funded by College of Engineering, Texas Tech University, State Line Item Research Program, \$23,500, 9/92-9/93.
 - 19) Co-Investigator: "High-Voltage Space Power Research", Funded by Defense Nuclear Agency (DNA), \$250,000, 1/92-1/93.
 - 20) Co-Investigator: "Effect of Thermal Cycling and Space Conditions on the High Voltage Flash-Over of Dielectrics", Funded by Defense Nuclear Agency (DNA), \$460,000, 1/92-1/93.
 - 21) Principal-Investigator: "Composite Materials", Funded by W.G. Composites, \$60,000, 12/91.
 - 22) Co-Investigator: "Effect of Thermal Cycling and Space Conditions on the High Voltage Flash-Over of Dielectrics", Funded by Defense Nuclear Agency (DNA), \$500,000, 1/91-1/92.
 - 23) Principal Investigator: "Experimental Measurement of Residual Stresses Due to Non-uniform Cooling Following Heat Treatment Operation", Funded by Alcoa Technical Center, \$10,000, 1/91-1/93.
 - 24) Principal Investigator: "Ultrasonic-Based Measurement of Residual Stresses Induced by Large Deformation Manufacturing Processes", Funded by Engineering Foundation, a Department of Engineering Trustees Inc., \$20,000, 9/90-9/91.
 - 25) Principal Investigator: "Equipment for Ultrasonic-Based Measurement of Residual Stresses Induced by Large Deformation Manufacturing Processes", Funded by Texas Tech University, \$24,000, 6/91-6/92.

- 26) Co-Investigator: "Avionics Integrity: Finite Element Analysis of LRUs and PCBs Subjected to Vibration and/or Thermal Environments", Funded by General Dynamics/FW, \$100,000, 1/90-1/91.
- 27) Principal Investigator: "Physical and Numerical Modeling of Metal-Forming Processes", Alcoa Research Foundation, \$7,500, 6/89-90.
- 28) Co-Investigator: "An Automated Video-Optical Diffractometry Technique for Measurement of Strain on Curved Surfaces", Funded by the Advanced Technology Program (ATP), Texas Higher Education Coordinating Board, \$114,000, 6/88-9/90.
- 29) Co-Investigator: "Development of a Beam Pump Intelligent Well Controller: Measurement of Position, Displacement and Induced Forces", Funded by Teledyne Merla Inc., \$7,000, 1/89-1/90.

College Service

Committee Member, College of Engineering Grade Appeal Board. (February 15, 2016 - Present).

Department Service

Committee Member, College of Engineering Grade Appeal Board. (February 1, 2016 - Present).

Committee Member, ABET Committee. (January 1, 2016 - Present).

Committee Chair, Undergraduate Laboratory Committee. (January 1, 2016 - Present).

Committee Chair, Materials & Mechanics Lab Course Coordinator. (January 1, 2015 - Present).

Committee Chair, Solid Mechanics (ME 3403) Course Coordinator. (January 1, 2012 - Present).

Committee Member, Department of Mechanical Engineering Web Page Committee. (January 1, 2015 - December 31, 2016).

Faculty Advisor, Research Advisor for 3 graduate students and 3 undergraduate students. (January 1, 2011 - February 1, 2014).

Faculty Mentor, Faculty Mentor to Changdong Yeo. (January 1, 2012 - January 1, 2014).

Committee Member, Faculty Search Committee. (January 1, 2012 - December 1, 2012).

Committee Member, Design position search committee. (November 1, 2011 - November 1, 2012).

Committee Member, Staff Award Committee. (October 1, 2012 - October 10, 2012).

Committee Member, Faculty Awards Committee. (September 21, 2011 - September 21, 2012).

Committee Member, Search Committee. (January 1, 2011 - December 30, 2011).

Committee Member, ABET Review Committee. (January 1, 2010 - February 1, 2011).

Committee Chair, Faculty Retreat. (January 10, 2010 - December 10, 2010).

Committee Chair, Strategic Planning. (September 1, 2009 - December 10, 2010).

Committee Member, Faculty Search - Control Position. (January 10, 2010 - August 10, 2010).

Public Service

Guest Speaker, National Academy of Forensic Engineers (NAFE), Miami, FL. (January 1, 2013 - Present).

Guest Speaker, Texas Trial Lawyers Association, Lubbock, TX. (October 6, 2013).

Research in Progress

"Assessment of Damage in Hail Impacted Galvanized Steel" (On-Going).

"Characterization of Crack Initiation and Propagation in Polymer Matrix Composites (PMC's)" (Complete).

"Development of a Novel Technique for Measurement of Residual Stresses" (On-Going).

"Effect of Drilling Speed on Residual Stress Measurements Utilizing the Hole-Drilling Technique" (Complete).

A parametric study of various drilling speeds and how it affects Residual Stress Measurements in Metallic Materials

"Failure Analysis & Performance Characterization of Wind Tower Bolts" (On-Going).

"Fracture & Damage Analysis" (Complete).

Formulation of Damage Characteristics in Composite Materials

"Measurement of Dynamic Coefficient of Friction and Effect of Surface Treatments" (On-Going).

"Nondestructive Evaluation of Fatigue Crack Propagation" (Complete).

"Environmental-Assisted Degradation of Polymeric Webbing" (On-Going). (January 1, 2014 - Present).

This project is a study of the effect of outdoor exposure, including UV radiation, temperature and humidity, on mechanical properties of polymeric webbing materials.

"Development of Speckle Interferometry Setup for Residual Stress Measurement and Flaw Detection" (On-Going). (September 1, 2013 - Present).

Collaborations with Los Alamos National Lab Researchers led to acquisition of Speckle Interferometry equipment for measurement of Residual Stresses, flaw/crack detection of up to 200 nm resolution. This equipment is commercially available for close to \$100K, but was obtained free of charge and is currently operating in the Materials Characterization and Failure Analysis Lab in Mechanical Engineering Dept.

"Corrosion Resistance Characterization of Damaged Galvanized Steel" (On-Going). (October 1, 2012 - Present).

Effect of mechanical surface damage to the galvanized layer in galvanized steel panels is being studied via controlled damage followed by accelerated corrosion tests in a newly developed corrosion chamber.

"Effect of Surface Texture on Dynamic Coefficient of Friction of Tile Surfaces" (Complete). (May 1, 2012 - June 1, 2013).

Surface Texture of tile surfaces used as walking surfaces are affected by the type of tile as well as the type of surface treatments commonly used for cleaning such surfaces. A parametric study was performed to measure the Dynamic Coefficient of Friction on various tiles treated via 5 commercially available cleaning treatments.

"Failure Characterization of Bolts Utilized in Construction of Wind Turbine Towers" (Complete). (January 1, 2013 - May 1, 2013).

Bolts used in construction of wind turbine towers are susceptible to failure via fatigue and/or overload. The objective of this study was to determine the relative strength of three different types of bolts being considered and quantification of their resistance to fatigue and overload failures.

"Failure Characterization of Polymeric Support Structures Subjected Cyclic Loading" (Complete). (October 1, 2012 - May 1, 2013).

Polymeric load bearing support structures are routinely used due to their high strength to weight ratio. This study focuses on characterizing surface features on specimens fractured via cyclic loading and comparison of these features with fracture features obtained via static overload as well as dynamic loading.

Directed Student Learning

Noah Reyes, Directed Individual/Independent Undergraduate Study, "Simulation of Damage in Marine Vessel Crashes," Mechanical Engineering. (August 28, 2016 - Present).

Allen Henley, Directed Individual/Independent Undergraduate Study, "Experimental Simulation of Damage in Composite Materials used In Marine Vessels," Mechanical Engineering. (August 26, 2016 - Present).

Tyler Crupper, Directed Individual/Independent Undergraduate Study, "Experimental Simulation of Damage in Composite Materials used In Marine Vessels," Mechanical Engineering. (August 26, 2016 - Present).

Mehzubh Bismi, Directed Individual/Independent Graduate Study, "Experimental Simulation of Damage in Composite Materials used In Marine Vessels," Mechanical Engineering. (August 1, 2016 - Present).

Adrain Reyes, Directed Individual/Independent Undergraduate Study, "Experimental Simulation of Damage in Composite Materials used In Marine Vessels," Mechanical Engineering. (August 1, 2016 - Present).

Cesar Barras, Directed Individual/Independent Undergraduate Study, "Experimental Simulation of Damage in Composite Materials used In Marine Vessels," Mechanical Engineering. (August 1, 2016 - Present).

Chance Logan, Directed Individual/Independent Undergraduate Study, "Experimental Simulation of Damage in Composite Materials used In Marine Vessels," Mechanical Engineering. (August 1, 2016 - Present).

Vlad Coltisor, Directed Individual/Independent Undergraduate Study, "Experimental Simulation of Damage in Composite Materials used In Marine Vessels," Mechanical Engineering. (August 1, 2016 - Present).

Jacob Jinojos, Directed Individual/Independent Undergraduate Study, "Metallurgical Analysis of Damage due to Hail Impact," Mechanical Engineering. (May 1, 2016 - Present).

Grant Gowdy, Directed Individual/Independent Undergraduate Study, "Corrosion Failure of Steel Guy Wires for Support of Gas Flare Stacks," Mechanical Engineering. (December 1, 2015 - Present).

Graham Walker, Other, "Safety Consideration in Forensic Engineering," Mechanical Engineering. (September 1, 2015 - Present).

Saeed Babamohammadi, Doctoral Advisory Committee Chair, "Experimental & Numerical Investigation of Impact Damage to EPDM/Adhesive Interface," Mechanical Engineering. (January 1, 2015 - Present).

Vikram Chavan, Directed Individual/Independent Graduate Study, "Safety Engineering," Mechanical Engineering. (January 1, 2016 - December 15, 2016).

Oyebode Adeyi, Supervised Research, "Effect of Hail Impact Damage on Corrosion Resistance of Galvanized Steel," Mechanical Engineering. (September 1, 2015 - December 15, 2016).

Chandrasekhar Meduri, Undergraduate Research, "Effect of Hail Damage on Corrosion Resistance of Galvanized and Galvalume Steel," Mechanical Engineering. (September 1, 2015 - December 15, 2016).

John Adeyi, Undergraduate Research, "Effect of Hail Damage on Corrosion Resistance of Galvanized and Galvalume Steel," Mechanical Engineering. (September 1, 2015 - December 15, 2016).

Kevin Ton-That, Undergraduate Research, "Effect of Hail Damage on Corrosion Resistance of Galvanized and Galvalume Steel," Mechanical Engineering. (September 1, 2015 - December 15, 2016).

Matthew Millican, Undergraduate Research, "Effect of Hail Damage on Corrosion Resistance of Galvanized and Galvalume Steel," Mechanical Engineering. (September 1, 2015 - December 15, 2016).

Casey Henderson, Undergraduate Research, "Modeling of Stresses in Cylindrical Water Tank Construction," Mechanical Engineering. (June 1, 2015 - December 15, 2016).

April Logan, Supervised Research, "Environmental Degradation of Polymeric Fabrics," Mechanical Engineering. (January 1, 2015 - December 15, 2016).

April Logan, Undergraduate Honors Thesis, "Ultraviolet & Environmental Degradation of Polymeric Fibers," Mechanical Engineering. (January 1, 2015 - December 15, 2015).

Pawan Maharjan, Master's Thesis Committee Chair, "Measurement of Residual Stresses via Holographic Interferometry and Hole Drilling Method," Mechanical Engineering. (September 1, 2013 - May 1, 2015).

Neil Kanungo, Master's Thesis Committee Chair, "Ultraviolet and Environmental Degradation of Polymeric Fabrics," Mechanical Engineering. (January 1, 2013 - May 1, 2014).

Andrew Schmit, Master's Thesis Committee Chair, "Effect of Helmet Design on Reduction of Head Injury in Football," Mechanical Engineering. (June 1, 2012 - May 1, 2014).

Kaushik Das, Dissertation Committee Chair, "Application of Experimental and Finite Element Techniques in Residual Stress Measurement," Mechanical Engineering. (December 1, 2011 - December 1, 2012).

Yasamin Nikour, Dissertation Committee Chair, "Experimental and Finite Element Characterization of Fracture Mechanics in Brittle Materials used for Grinding Operations," Mechanical Engineering. (August 26, 2010 - August 1, 2012).

Clayton Moore, Master's Thesis Committee Chair, "Small Fatigue Crack Detection using Phased Array Technology," Mechanical Engineering. (August 26, 2010 - May 1, 2012).

Evan Shimek, Master's Thesis Committee Chair, "Assessment of Damage in Hail Impacted Galvanized Steel," Mechanical Engineering. (January 1, 2009 - December 30, 2011).

David Upshaw, Master's Thesis Committee Chair, "Effect of Drilling Speed on Residual Stress Measurements Utilizing the Hole-Drilling Technique," Mechanical Engineering. (June 1, 2009 - May 30, 2011).

Daniel Steves, Master's Thesis Committee Chair, "Mechanical Performance of Tungsten Inert Gas Welded Aluminum Alloy 6061-T6," Mechanical Engineering. (August 26, 2009 - December 10, 2010).

GRADUATE STUDENT SUPERVISION (Incomplete List)

<u>Student's Name</u>	<u>Degree Earned</u>	<u>Thesis/Dissertation Title</u>
Daniel Stevens (Committee Chair)	M.S.- M.E. In Progress	"A new Apparatus for Measurement of Residual Stresses Utilizing Hole-Drilling Method"
Mike Tiprigan (Committee Chair)	M.S.- M.E. In Progress	"Experimental Study of Failure in High-Pressure Hoses"
Sharath Neelakanta (Committee Chair)	M.S.- M.E. In Progress	"Experimental Study of Hail Impact Damage on Roofing Materials"

Dr. Jahan Rasty

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Spandan Archa (Committee Chair)	M.S.- M.E. In Progress	“Analysis of Residual Stresses via Hole-Drilling and Contour Methods”
Raja Gudipati (Committee Chair)	M.S.- M.E. In Progress	“Effect of Acid Cleaning on Fractographic Features in Typical Fracture Surfaces”
Dhananjay Ghatpande (Committee Chair)	M.S.- M.E. In Progress	“Experimental study of the Energy Absorption Characteristics of Football Helmets”
Archis Marathe (Committee Chair)	M.S.- M.E. In Progress	“Failure Analysis of Synthetic Ropes”

GRADUATE STUDENT SUPERVISION (Incomplete List)

<u>Student's Name</u>	<u>Degree Earned</u>	<u>Thesis/Dissertation Title</u>
Amit Kumar (Committee Chair)	M.S.- M.E. In Progress	
Andrew Schmit (Committee Chair)	M.S.- M.E. May 2014	“Effect of Bladder Pressure on Energy Absorption Characteristics of Football Helmets”
Neil Kanungo (Committee Chair)	M.S.- M.E. May 2014	“Environmental Degradation of Polymeric Webbing Materials, Effects of UV, Heat and Humidity”
Zack Branson (Committee Chair)	B.S.- M.E. December 2013	“Root-Cause Failure of a Polyurethane Chair”
Neil Kanungo (Committee Chair)	M.S.- M.E. December 2011	“Analysis of Damage to Galvanized Steel Due to Hail Impact”
David Upshaw (Committee Chair)	M.S.- M.E. May 2011	“Finite Element Study of Collision Impact”
Hutcheson, Stephen (Committee Member)	Ph.D.- CHEE, August 2008	Evaluation of Viscoelastic Materials: The Study of Nanosphere Embedment into Polymer Surfaces and Rheology of Simple Glass Formers Using a Compliant Rheometer
Dhorje, Mrugesh (Committee Member)	M.S. – M.E. August 2008	Application of Modified Weibull Failure Theory For Contact Loading
Ramkumar (Committee Chair)	Ph.D. - M.E. Dec. 2007	“High Strain-Rate and High Temperature-Rate Characterization of Material Properties”
Nathan Poerner (Committee Chair)	M.S. – M.E. Dec. 2007	“Round-Robin Study of Residual Stress Measurement Techniques”
Vipin Palande (Committee Chair)	M.S. – M.E. May 2009	“3-D Finite Element Analysis of residual Stress in Cold Expanded Holes”

Gautam Kumar (Committee Chair)	M.S.- M.E. May 2005	“Failure Analysis of an Engine Bearing Cap”.
Xiabin Le (Committee Chair)	Ph.D. – M.E.	“Experimental and Finite Element Analysis of Explosive Loading in MFCGs”
Nripendu Dutta (Committee Chair)	Ph.D. – M.E.	“Experimental and Finite Element Analysis of Elasto-Plastic Boundary in Cold Expanded Holes”
Ali Raja (Committee Chair)	M.S.- M.E.	“Experimental Study of Bending Fracture Stress of Rat Bones Subjected to Different Diets”

Advisor to Doctoral Dissertations and Masters Thesis Research Projects: (Incomplete List)

<u>Student’s Name</u>	<u>Degree Earned</u>	<u>Thesis/Dissertation Title</u>
Nripendu Dutta	Ph.D.- M.E. 1997	“Analytical, Numerical, and Experimental Investigations of Elastic-Plastic Boundary and Residual Stress Field around a Cold-Expanded Hole”

PROFESSIONAL SERVICES:

- 2006-2007** **10th World Conference on Integrated Design & Process Technology**, May 27- June 1, 2007, Antalya, Turkey, Member of program committee, served as session organizer and reviewer.
- 2005:** **National Science Foundation Grant Review Panel**
Served as a reviewer for NSF's Division of Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs covering the topics of Manufacturing and Machine Design.
- 2001-Present:** **Secretary - ASME Great International Region X**
Responsibilities included serving on ASME-Region X Operating Board and assisting the VP with the operation of region X activities.
- 1998-2001:** **Assistant VP for Education – ASME Great International Region X**
Responsibilities included serving on ASME-Region X Operating Board covering more than 50 universities in 4 states and two countries, organization of the annual ASME Regional Student Conference (RSC), Graduate Student Technical Conference (GSTC), Design Contest, as well as organization of the annual Regional Student Leadership Seminar (RSLs) for training of incoming ASME student officers.
- 1991-Present:** **ASM/TMS Student Chapter Faculty Adviser,**
Department of Mechanical Engineering, Texas Tech University.
Founded the first joint student chapter of the American Society of Materials and The Metallurgical Society (ASM/TMS) at Texas Tech University.
- 1989-2002:** **ASME Student Chapter Faculty Adviser,**

Department of Mechanical Engineering, Texas Tech University.
 Provided support and guidance to the local student chapter of the American Society of Engineers.

- 1998:** **Society for Experimental Mechanics (SEM) Session Chairman,**
 Served as the chairman for a session on "Application of Numerical Modeling to the Analysis of Residual Stresses" at the SEM's 1998 Spring Conference, June 2-4, 1998, Houston, Texas.
- 1997:** **National Science Foundation Advisory Panel**
 Served as an NSF advisory panelist for the Individual Investigator Award (IIA) proposals in the Mechanics and Materials program in the Division of Civil and Mechanical System, June 9 and 10, 1997.
- 1995-1996:** **Soc. for Design and Process Sci. (SDPS) Conference Symposium Developer,**
 Served as the "Materials" Symposium Chairman. Organized the "Materials" symposium at the SDPS's Second World Conference on Integrated Design & Process, held December 1-4, 1996, Austin, Texas.
- 1995-1996:** **ASME Conference Symposium Developer,**
 Served as the U.S. Symposium Chairman. Organized the "Manufacturing" symposium at the ASME's Third European joint conference on Engineering Systems Design and Analysis (ESDA), held July 1-4, 1996, Montpellier, France.
- 1993-1994:** **ASME Conference Session Developer,**
 Served as a session developer. Organized and developed a session in "Plasticity" at the ASME's Second European joint conference on Engineering Systems Design and Analysis (ESDA), held July 4-7, 1994, London, England.
- 1992-1994:** **Society for Experimental Mechanics, Residual stress Committee.**
 Served on the SEM Residual Stress Committee and helped with the organization of conference sessions, publications, and workshops.
- 1993:** **Society for Experimental Mechanics Conference Session Developer,**
 Organized and chaired a sponsored session on the "Application of Numerical Methods to the Analysis of Residual Stresses," for the 50th Annual Spring Conference of the Society for Experimental Mechanics, June 5-12, 1993, Dearborn, Michigan.
- 1992:** **ASME Conference Session Developer,**
 Served as a session developer. Organized, developed and chaired a session in "Plasticity" at the ASME's first European joint conference on Engineering Systems Design and Analysis (ESDA), June 29-July 4, 1992, Istanbul, Turkey.
- 1988-1989:** **SAE Project Faculty Co-Adviser,**
 Department of Mechanical Engineering, Texas Tech University.
 Assisted in the organizing of the SAE National Walking Machine Decathlon Contest, held at Texas Tech in April, 1989. This is an annual robotics competition aimed at promoting interdisciplinary cooperation among undergraduate engineering students from ME, CE, EE, and CS Departments.

- 1991-1997:** Adopt-a-Classroom Project. Assisted local high schools with engineering-related design projects and competitions that help promote the field of engineering.
- 1991-1993:** Member of the Board of Directors of Lubbock Tennis Association (LTA).
- 1989-1990:** Volunteer judge at the "**Math Count**" competition among local schools.

PATENTS:

1. Trafton Rodgers, Jahan Rasty, Trae Blain, Neal St. Martin, Walter Fagley and Kurt W. Niederer, *Adjustable Toilet Lift*, Patent Number 8800074, Issued August 12, 2014.

SCIENTIFIC PUBLICATIONS:

1. Rasty, J., National Academy of Forensic Engineers Winter Annual Meeting, "Forensic Engineering Analysis of Factors Contributing to the Explosion of Table Torch," New Orleans, LA. (January 11, 2017).
2. Rasty, J., Adeyi, J., Millican, M., Meduri, C., Ton-That, K., Adeyi, O. *Effect of Hail Impact Damage on the Corrosion Behavior of Roofing Grade Galvanized and Galvalume Steel*. Vancouver: National Association of Corrosion Engineers (NACE) Annual Conference 2016.
3. Rasty, J., Logan, A. (2015). *Ultraviolet and Environmental Degradation of Polymeric Fabrics*. Posters on The Hill, Washington D.C..
4. Rasty, J., "A Forensic Engineering Investigation of Failure in Hunting Treestands," National Academy of Forensic Engineers, Newport Beach, CA. (January 20, 2013).
5. Rasty, J. (Presenter & Author), National Academy of Forensic Engineers, "Experimental and Computer-Aided Assessment of Damage to Galvanized Steel due to Hail Impact," NAFE, Miami, FL. (January 5, 2012).
6. SHIMEK, E., Ekwaro-Osire, S., Rasty, J. (2011). *Probabilistic Analysis of Steel Roof Damage from Hail Strike*. Proceedings of the 2011 ASME International Mechanical Engineering Congress & Exposition, Denver, Colorado, Nov 11–17, 2011.
7. Jahan Rasty and Archis Marathe, "Effect of Material Composition and Failure Mode on Treatment of Corroded Fracture Surfaces for Optimal Fractography," Accepted for presentation at the ASME International Mechanical Engineering Congress & Exhibition, November 12-18, 2010, Vancouver, British Columbia.
8. Dutta, N., and Rasty, J., "Prediction of Elastic-plastic Boundary around Cold-expanded Holes Using Elastic Strain Measurement", J. of Materials Engineering Technology (accepted).

9. Xiaobin Le and Jahan Rasty, "A probabilistic Approach to Determination of Component Dimensions under Fatigue Loading," Proceedings of ASME 2009 International Design Engineering Technical Conferences, IDETC, August 30-September 2, 2009, San Diego, CA.
10. Rasty J., Le, X., Palande, V., "Does Hail Damage Constitute Material Failure? An Experimental and Finite Element Study of Hail-Induced Damage in Metallic Roofing Materials", Journal of Engineering Failure Analysis (accepted).
11. Baydogan, M., Cimenoglu, E., Kayali, S., and Rasty, J., "Improved Resistance to Stress-Corrosion Cracking Failures via Optimized Retrogression and Re-Aging of 7075-T6 Aluminum Sheets, Journal of Metallurgical Transactions A, Volume 39, Number 10, October, 2008, pp. 2470-2476.
12. Nathan Poerner, Jahan Rasty and Mike Steinzig, "Round Robin Study of Residual Stress Measurement Techniques," 3rd International Residual Stress Summit, October 2-4, 2007, Oak Ridge National Laboratory, Oak Ridge, TN.
13. Nathan Poerner, and Jahan Rasty, "Effect of Cutting Method on Residual Stress Measurement via Slitting Technique," Society for Experimental Mechanics (SEM) Annual Conference, June 3-6, 2007, Springfield, Massachusetts.
14. Shen, C.L, Yeh, J.K., Rasty, J., Chyu, M.C., Dunn, D.M., Li, Y., Watkins, B.A., "Improvement of Bone Quality in Gonad-Intact Middle-Aged Male Rats by Long-Chain n-3 Polyunsaturated Fatty Acid", J. of Calcification Tissue International, Vol. 80, April 2007, , pp 286-293.
15. Rasty, J., Le X., Baydogan, M., and Cardenas-Garcia, J.F., "Measurement of Residual Stresses in Nuclear-grade ZR-4(R) Tubes: Effect of Heat Treatment," Journal of Experimental Mechanics, Vol.47, Issue 2, Apr. 2007, pp. 185-199.
16. R. Srinivasan,, and J. Rasty, "Prediction and Measurement of Residual Stresses in Extruded and Drawn Rods and Tubes," The Minerals, Metals & Materials Society (TMS) 2007 Annual Meeting & Exhibition, February 25 – March 1, 2007, Orlando, Florida.
17. Yanzhang Ma, Jianjun Liu, Chun-Xiao Gao, Allen White, W. N. Mei, and Jahan Rasty, "High-pressure X-ray diffraction study of the giant dielectric constant material $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$: evidence of stiff grain surface", Applied Physics Letters, Vol. 88, 191903, May 2006.
18. Chwan-Li Shen, James K. Yeh, Jahan Rasty, Yong Li, and Bruce A. Watkins, "Protective effect of dietary long chain n-3 PUFA on bone loss in intact middle-aged male rats," British Journal of Nutrition, Vol. 95, No. 3, March 2006, pp. 462-468.
19. J. Rasty, and X. Le, "Does Hail Damage Constitute Material Failure? An Experimental and Finite Element Study of Hail-induced Damage in Metallic Roofing Materials," 2nd International Conference on Engineering Failure Analysis (ICEFA-II), September 13-15, 2006, Toronto, Canada.
20. J. Rasty, A. Ertas, and R. Couvillion, Editors, "Proceedings of the 4th Joint ASME/SDPS International Graduate Student Technical Conference", April 7-8, 2006, Fayetteville, Arkansas.

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21. J. Rasty, and H. Sari-Sarraf, "Application of X-Ray Tomography, Light and Scanning Electron Microscopy to Failure Analysis of a Fill-Valve Coupling Nut," 2nd International Conference on Engineering Failure Analysis (ICEFA-II), September 13-15, 2006, Toronto, Canada.
 22. Murat Baydoğan, Hüseyin Çimenoglu, E. Sabri Kayalı, and Jahan Rasty, "Effect of Retrogression and Re-aging Treatment on Stress Corrosion Cracking Resistance of 7075 Aluminum Alloy", Proceedings of the 135th TMS (The Minerals, Metals & Materials Society) Conference, March 12-16, 2006, San Antonio, TX.
 23. Yanzhang Ma, Jianjun Liu, Chun-Xiao Gao, Allen White, W. N. Mei, and Jahan Rasty, "High-pressure X-ray diffraction study of the giant dielectric constant material $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$: evidence of stiff grain surface", 2006 American Physical Society (APS) March Meeting, March 13–17, 2006; Baltimore, MD.
 24. J. Rasty, M. Baydogan, K. Ramkumar, I. Rivero, and J.F. Cardenas-Garcia, "Measurement of Residual Stresses in Nuclear-Grade Zircaloy–4(R) Tubes – Effect of Heat Treatment," 2nd Residual Stress Summit, Vancouver, Canada, August 10-12, 2005.
 25. P. Worsey, J. Baired, and J. Rasty, Book Section: "Mechanical Aspects," Explosively Driven Pulsed Power – Helical Magnetic Flux Compression Generators, Springer Publishing, 2005, pp. 53-125.
 26. J. Rasty, A. Ertas, and R. Couvillion, Editors, "Proceedings of the Third Joint ASME/SDPS International Graduate Student Technical Conference", March 31- April 2, 2005, Lubbock, TX
 27. K.V. Ramkumar, and J. Rasty, "Effect of Combined Corrosion and Residual Stress on Fatigue Failure", proceedings of the 2004 Society for Experimental Mechanics (SEM) X International Congress, June 7-10, 2004, Costa Mesa, California.
 28. J.F. Cardenas-Garcia, and J. Rasty, "The Indentation Test Revisited: Obtaining Poisson's Ratio", proceedings of the 2004 Society for Experimental Mechanics (SEM) X International Congress, June 7-10, 2004, Costa Mesa, California.
 29. J. Rasty, A. Ertas, and R. Couvillion, Editors, "Proceedings of the Second Joint ASME/SDPS International Graduate Student Technical Conference", March 25-27, 2004, Longview, TX.
 30. Chawn-Le Shen, Dale M. Dunn, James, K. Yeh, Bruce A. Watkins, Yong Li, Ali Raja, and Jahan Rasty, "Dietary n-3 Polyunsaturated Fatty Acids Prevent Aging-induced Bone Loss in Male Rats." Presented at the Experimental Biology Conference, Washington D.C., April 2004.
 31. David Hemmert, John Mankowski, Jahan Rasty, Andreas Neuber, Xiaobin Le, James Dickens, and Magne Kristiansen, "Conductivity Measurements of Explosively Shocked Aluminum and OFHC Copper Used for Armature Material in a Magnetic Flux Compression Generator," Presented at the Pulsed Power Conference, Dallas, Texas, June 16-18, 2003.
 32. J. Rasty, R. Couvillion, and A. Ertas, Editors, "Proceedings of the First Joint ASME/SDPS International Graduate Student Technical Conference", March 28-29, 2003, Houston, TX.

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33. Jahan Rasty and Xiaobin Le, James Dickens, Andreas Neuber, and Magne Kristiansen, "Design Criteria for Prevention of Armature Turn-Skipping in Helical Magnetic Flux Compression Generators," Presented at the Pulsed Power Conference, Dallas, Texas, June 16-18, 2003.
 34. Rasty, J., Le, X., Neuber, A., Dickens, J., Kristiansen, M. "Microstructural Evolution of the Armature Material Subjected to Explosive Shock-Loading in Magnetic Flux Compression Generators," Proceedings of the Ninth International Conference on Megagauss Magnetic Field Generation and Related Topics, Moscow-St. Petersburg, Russia, July 7-14, 2002, pp. 197-201.
 35. Rasty, J., Le, X., Neuber, A., Dickens, J., Kristiansen, M. "Effect of Scaling on Armature Expansion Angle in Magnetic Flux Compression Generators," Proceedings of the Ninth International Conference on Megagauss Magnetic Field Generation and Related Topics, Moscow-St. Petersburg, Russia, July 7-14, 2002, pp. 191-196.
 36. Barry J. Henry, MD, Mike Kenison, BS, Catherine McVay, PhD, Rial Rolfe, PhD, Suzanne Graham, MD, Jahan Rasty, PhD, James Slauterbeck, MD, Eugene J. Dabezies, MD, "The Effect of Local Hematoma Blocks on Early Fracture Healing," Feature Article in the Journal of Orthopedics, Vol. 25, No. 11, November 2002, pp. 1259-1262.
 37. Rasty, J., Le, X., "Failure Analysis of the Rear Axles in a Sports Utility Vehicle (SUV)," Symposium on Failure Analysis and Prevention, 2001 ASME International Mechanical Engineering Congress & Exposition, New York, NY, November 11-16, 2001.
 38. Rasty, J., Le, X., Neuber, A., Dickens, J., and Kristiansen, M." Experimental and Numerical Investigation of the Armature/Stator Contact in Magnetic Flux Compression Generators," Proceedings of the 28th IEEE International Conference on Plasma Science, Las Vegas, Nevada, June 17-22, 2001.
 39. Le, X., Rasty, J., Neuber, A., Dickens, J., and Kristiansen, M." Calculation of Air Temperature and Pressure History During the Operation of a Flux Compression Generator," Proceedings of the 28th IEEE International Conference on Plasma Science, Las Vegas, Nevada, June 17-22, 2001.
 40. Hemmert, D., Rasty, J., Le, X., Neuber, A., Dickens, J., and Kristiansen, M." Conductivity Measurements of MFCG Armature Material Under Shock and High Strain Rates Utilizing a Split-Hopkinson Pressure Bar Apparatus," Proceedings of the 28th IEEE International Conference on Plasma Science, Las Vegas, Nevada, June 17-22, 2001.
 41. Sofuoglu, H., Gedikli, H., Rasty, J., "Determination of Friction Coefficient by Employing the Ring Compression Test," ASME Transactions - Journal of Engineering Materials and Technology (JEMT), Vol. 123, issue 3, July 2001, pp. 338-348.
 42. Sofuoglu, H., Rasty, J., "Flow Behavior of Plasticine used in Physical Modeling of Metal Forming Processes," Journal of Tribology International, Vol. 33, Issue 8, October 2000, pp. 523-529.
 43. Sofuoglu, H., Rasty, J., "On the Measurement of Friction Coefficient Utilizing the Ring Compression Test" Journal of Tribology International, Vol. 32, Issue 6, January 2000, pp. 327-335.

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44. Neuber, A., Dickens, J., Giesselmann, M., Freeman, B., Rasty, J., Le, X., Krompholz, H., and Kristiansen, M." Fundamental Studies of a Simple Helical Magnetic Flux Compression Generator," Proceedings of the 27th IEEE International Conference on Plasma Science, New Orleans, LA, June 4-7, 2000.
 45. Rasty, J., Le, X., Neuber, A., Zhang, J., Dickens, J., "Measurement of Dynamic Electrical Conductivity of MFCG Armature Material under Conditions of Shock and High Strain Rate Loading," Proceedings of the 12th IEEE International Pulsed Power Conference, June 27-30, 1999, Monterey, CA, pp. 708-711.
 46. Dutta, N., Rasty, J., "Determination of Elastic-plastic Boundary around Cold-expanded Holes Using Elastic Strain," Proceedings of the 1999 Society for Experimental Mechanics (SEM) Spring Conference, June 7-9, 1999, Cincinnati, Ohio.
 47. Dutta, N., Rasty, J., and Rassaian, M., "Evolution of Internal Stresses in Co-Drawing Bimetallic Rods," Proceedings of the 1998 Society for Experimental Mechanics (SEM) Spring Conference, June 1-3, 1998, Houston, Texas.
 48. Dutta, N., Rasty, J., and Rassaian, M. "Finite Element Analysis of Elastic-Plastic Zone Around Cold-Expanded Holes," Post-Conference Proceedings of the 1997 Society for Experimental Mechanics (SEM) Spring Conference, June 2-5, 1997, Bellevue, Washington, pp. 108-115.
 49. Rasty, J., Dutta, N., Dehghani, M., and Rassaian, M. "Finite Element Analysis of Residual Stresses and Interface Shear Strength in Co-Drawing of Tubular Components," proceedings of the 1997 Society for Experimental Mechanics (SEM) Spring Conference, June 2-5, 1997, Bellevue, Washington.
 50. Rasty, J. and Sofuoglu, H., " On the Measurement of Friction Coefficient Utilizing the Ring Compression Test: Part II - Effect of Deformation Speed, Strain Rate and Barreling," Proceedings of the 1996 ASME European Joint Conference on Engineering Systems Design and Analysis (ESDA), Symposium on Manufacturing, July 1-4, 1996, Montpellier, France, PD-Vol. 75, pp. 189-197.
 51. Bellet, M., Rasty, J., Editors, "Volume 3: Composite Materials, Manufacturing, Fatigue, and Fracture," ASME Engineering Systems Design and Analysis, ASME Publishing, 1996.
 52. East, I.I., Veniali, F., Rasty, J., Gransberg, D.D., Ertas, A., Editors, "Integrated Design and Process Technology," Society for Design and Process Science Publishing, 1996.
 53. Rasty, J., H. Shin, "The Effect of Machining Operations on Changes in Curvature and Redistribution of Residual Stresses," Proceedings of the 1995 ASME/Winter Annual Meeting - Symposium on Recent Advances in Structural Mechanics, November 12-17, 1995, San Francisco, CA, PVP-Vol. 321/NE-Vol.18, pp. 65-78.
 54. Sofuoglu, H., and Rasty, J. " On the Measurement of Friction Coefficient Utilizing the Ring Compression Test: Part I - Effect of Material Properties," Proceedings of the 1994 ASME European Joint Conference on Engineering Systems Design and Analysis (ESDA), Symposium on Design: Analysis, Synthesis, and Applications, July 4-7, 1994, London, England, PD - Vol. 64-8.1, pp. 55-62.

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55. Rasty, J., Kolarik, W., and Chen, B.M., "Designing Surface Mounted Components for High Reliability," Journal of Energy Resources Technology, Vol. 116, No. 3, September 1994, pp. 232-239.
 56. Rasty, J., and Tamhane, P., "Application of the Finite Element Method to the Quasi-Static Thermoelastic Analysis of Prestress in Multilayer Pressure Vessels," ASME Transactions, Journal of Pressure Vessel Technology, Vol. 116, No. 3, August 1994, pp. 254-260.
 57. Hashemi, J., Rasty, J., Li, S., and Tseng, A.A., "Integral Hydro-Bulge Forming of Single and Multi-Layered Spherical Pressure Vessels," ASME Transactions, Journal of Pressure Vessel Technology, Vol. 115, No. 3, August 1993, pp. 249-255.
 58. Sofuoglu, H., Rasty, J., "3-D Simulation of the Extrusion Process Utilizing the Physical Modeling Technique," Journal of Energy Sources Technology. Vol. 115, No. 1, March 1993, pp. 32-40.
 59. Rasty, J. "Application of the Sach's Boring-out and Finite Element Techniques to the Measurement of Residual Stresses In Oxygen-free High Conductivity Copper Tubes," First International Conference on Processing Materials for Properties, November 7-10, 1993, Honolulu, Hawaii.
 60. Rasty, J. "Application of FEM to the Analysis of Tube Drawing Process: I) Effect of Temper on Drawing and Residual Stresses," Proceedings of the Society for Experimental Mechanics, 1993 Spring Conference, June 6-11, 1993, Dearborn, Michigan, pp. 233-247.
 61. Rasty, J., Book Section: "Residual (Internal) Stress Considerations in Design," The Engineering Design Process, A. Ertas, and J.C. Jones, John Wiley & Sons Publishing, 1993.
 62. Rasty, J., Hunter, D., and Roy, G. "Application of ABAQUS and ADINA Finite Element Codes to the Analysis of Residual Stresses Induced by Rapid Quenching," Proceedings of the Society for Experimental Mechanics, 1993 Spring Conference, June 6-11, 1993, Dearborn, Michigan, pp. 205-213.
 63. Rasty, J., Hashemi, J., Hunter D.E. and Dehghani, M., "Finite Element and Experimental Analysis of Stresses due to Quenching Process," Proceedings of the 1992 ASME/Winter Annual Meeting - Symposium on Computational Methods in Materials Processing, November 8-13, 1992, Anaheim, California, MD-Vol. 39 / PED-Vol.61, pp. 195-202.
 64. Rasty, J. and Chapman, D., "Isothermal and Thermomechanical Finite-Element Analysis of the Tube Drawing Process Utilizing a Fixed, Tapered Plug," Journal of Materials Engineering and Performance, Vol. 1, No.4, August 1992, pp. 547-554.
 65. Jiang, W., Dehghani, M., and Rasty, J. "An Investigation of Hydroforming of Sheet Metals with Varying Blankholding Loads," Proceedings of the 1992 ASME/Winter Annual Meeting - Symposium on Computational Methods in Materials Processing, November 8-13, 1992, Anaheim, California, MD-Vol. 39 / PED-Vol.61, pp. 87-96.
 66. Hashemi, J., Rasty, J., and Tseng, A.A. "Application of the Integrated Hydro-Bulge Forming Process to the Manufacturing of Multilayered Spherical Pressure Vessels," Proceedings of the

1992 ASME/Winter Annual Meeting - Symposium on Recent Advances in Structural Mechanics, November 8-13, 1992, Anaheim, CA, PVP-Vol. 248 / NE-Vol.10, pp.73-79.

67. Sofuoglu, H., and Rasty, J., "Three-Dimensional Physical Modeling of Extrusion Process," ASME European Joint Conference on Engineering Systems Design and Analysis, ESDA, June 29-July 3, 1992, Istanbul, Turkey. ASME - PD - Vol. 47-1, pp. 377-386.
68. Rasty, J., Hashemi, J., Hunter, D., and Roy, G., "Quenching-Induced Residual Stresses in Forged 7150-Aluminum Blocks," Proceedings of the Society for Experimental Mechanics, Spring Conference, June 8-11, 1992, Las Vegas, Nevada. pp. 756-765.
69. Rasty, J. and Farahaninia, K., "Internal Stress Distributions Resulting From Cold Drawing of Aluminum Tubes," Proceedings of the Society for Experimental Mechanics, Spring Conference, June 8-11, 1992, Las Vegas, Nevada. pp. 1793-1801.
70. Rasty, J., Kolarik, W., and Chen, B., "Designing Surface Mounted Components for High Reliability," Proceedings of the 1992 ASME Energy-Sources Technology Conference, Dynamics and Vibrations Symposium, January 26-29, 1992, Houston, Texas, ASME-PD-Vol. 44, pp. 41-52.
71. Kolarik, W., Rasty, J., Chen, B., and Kim, Y., "Electronics/Avionics Integrity: Definition, Measurement and Improvement," Proceedings of the 1992 Annual Reliability & Maintainability Conference, January, 1992, Las Vegas, Nevada, pp. 460-467.
72. Rasty, J. and Pushkar, T., "Application of the Finite Element Method to the Quasi-Static Thermoelastic Analysis of Prestress in Multilayer Pressure Vessels," Proceedings of the 1991 ASME/Winter Annual Meeting - Pressure Vessel and Piping Symposium, December 1-6, 1991, Atlanta, Georgia. ASME-PVP-Vol. 225 / NE-Vol. 7, pp. 95-102.
73. Rasty, J. and Chapman, D., "Effect of Process Variables on the Tube Drawing Process and Product Integrity," Proceedings of the 1991 ASME/Winter Annual Meeting, December 1-6, 1991, Atlanta, Georgia, ASME-PVP-Vol. 225 / NE-Vol. 7, pp. 81-94.
74. Rasty, J. and Hartley, C. S., "Effect of Various Degrees of Cold Working on the Residual Stress Patterns of Drawn OFHC Copper Tubes," Proceedings of the Society for Experimental Mechanics, Spring Conference, June 9-13, 1991, Milwaukee, Wisconsin, pp. 392-404.
75. Rasty, J., Husband, M., Eggleston, E., and McCrea, A., "Experimental Measurement of Residual Stresses Induced by Nonuniform Cooling of Aluminum Blocks," Sixty-Seventh Annual Southwestern and Rocky Mountain Division Symposium, SWARM, May 15-18, 1991, Lubbock, Texas.
76. Rasty, J., Alcouffe, D., and Handy, S., "Effect of Friction on Physical Modeling of Extrusion Process," Sixty-Seventh Annual Southwestern and Rocky Mountain Division Symposium, SWARM, May 15-18, 1991, Lubbock, Texas.
77. Rasty, J. and Hartley, C. S., "A Parametric Study of the Tube Drawing Process Utilizing the Finite Element Method," Proceedings of the 1990 Pacific Conference on Manufacturing, December 17-21, 1990, Sydney and Melbourne, Australia, pp. 243-254.

78. Rasty, J. and Sofuoglu, H., "On the Validity of Using PLASTICINE in Physical Modeling of Metalworking Processes," Proceedings of the Society for Experimental Mechanics, Spring Conference, June 3-6, 1990, Albuquerque, New Mexico, pp. 638-640.
79. Rasty, J. and Sofuoglu, H., "Flow Characteristics of Various Types of PLASTICINE Used in the Physical Modeling Technique," Proceedings of the Society for Experimental Mechanics, Spring Conference, June 3-6, 1990, Albuquerque, New Mexico, pp. 34-43.
80. Rasty, J. and Hartley, C. S., "Determination of Residual Stresses in Drawn OFHC Copper Tubes Using Electrochemical Machining (ECM)," Proceedings of the Society for Experimental Mechanics, Spring Conference, May 28-June 1, 1989, Cambridge, Massachusetts, pp. 893-900.
81. Rasty, J. and Cardenas-Garcia, J. F., "Development of a Walking Machine - A Tool for Promoting Interdisciplinary Cooperation Among Undergraduate Engineering Students," Proceedings of the ASEE Gulf-Southwest Conference, April 2-4, 1989, Lubbock, Texas, pp. 324-331.
82. Cardenas-Garcia, J. F., and Rasty, J., "An Automated Video Optical Diffractometry Technique for Measurement of Strain on Curved Surfaces," Texas Research Seminars Conference, April 24-25, 1989, Dallas, Texas.
83. Rasty, J. and Sabbaghian, M., "The Effect of Imperfect Contact between Adjacent Layers on the Integrity of Multilayered Wrapped Vessels," Journal of Pressure Vessel Technology, Transactions of the ASME, Vol. 110, No. 3, August 1988, pp. 247-254.
84. Cardenas-Garcia, J. F., Rasty, J. and Moulder, J. C., "NDE Applications of an Optical Technique for Noncontact Measurement of In-Plane Strains," Proceedings of Review of Progress in Quantitative NDE, University of California, San Diego, La Jolla, California, August 1-5, 1988, pp. 768-779.
85. Rasty, J. and Hartley C. S., "Experimental Measurement of Residual Stresses in Nuclear-Fuel Cladding," Proceedings of the Society for Experimental Mechanics, Spring Conference, June 19-23, 1986, New Orleans, Louisiana, pp. 254-263.
86. Rasty, J. and Sabbaghian, M., "The Effect of Imperfect Contact Between Adjacent Layers on the Integrity of Multilayer Wrapped Vessels," Proceedings of the 1985 ASME/Pressure Vessels and Piping Conference, New Orleans, Louisiana, June 23-26, 1985, PVP-Vol. 98-8, pp. 167-176.

INVITED LECTURES:

- 1) "FE Investigation into Factors Contributing to Explosion of a Common Table Top Torch", NAFE, January 14, 2017, New Orleans, Louisiana
- 2) "Working with Inexperienced or Busy Counsel: The Role of the Expert", SEAK, Inc., May 15, 2016, Rosemont, Illinois.
- 3) "A Forensic Engineering Investigation of Failure in Hunting Treestands," National Academy of Forensic Engineers, Newport Beach, CA. (January 20, 2013).

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- 4) National Academy of Forensic Engineers, "Experimental and Computer-Aided Assessment of Damage to Galvanized Steel due to Hail Impact," NAFE, Miami, FL. (January 5, 2012).
 - 5) Texas Society of Professional Engineers, "Forensic Engineering," NSPE, Lubbock, TX. (January 18, 2011).
 - 6) "Principles of Forensic Engineer," Institute for Forensic Sciences, TTU-IFS. (April 25, 2010).
 - 7) "Principles of Failure Analysis and Solid Mechanics", Raytheon Corporation, October 4-5, 2007, Garland, Texas.
 - 8) "Mechanics of Materials & Failure Analysis", Raytheon Corporation, October 13-14, 2006, Dallas, Texas.
 - 9) "Foundations of Engineering Principles: Statics, Dynamics, Materials, Solid Mechanics", Raytheon Corporation, October 14-15, 2005, Dallas, Texas
 - 10) "Principles of Forensic Engineering", 2005 Caprock Crime Scene Investigators (CSI) Camp. The Institute for the Development and Enrichment of Advanced Learners (IDEAL), June 30, 2005, Lubbock, TX.
 - 11) "Principles of Forensic Engineering", 2005 Caprock Crime Scene Investigators (CSI) Camp. The Institute for the Development and Enrichment of Advanced Learners (IDEAL), June 30, 2005, Lubbock, TX.
 - 12) "Foundations of Engineering Principles: Statics, Dynamics, Materials, Solid Mechanics", Raytheon Corporation, October 15-16, 2004, Dallas, Texas.
 - 13) "Foundations of Engineering Principles: Statics, Materials, Solid Mechanics", Raytheon Corporation, October 16-18, 2003, Dallas, Texas.
 - 14) "Engineering Principles: Statics, Materials, Solid Mechanics", Raytheon Corporation, October 17-19, 2002, Dallas, Texas.
 - 15) "Materials Mechanics & Failure Analysis", Raytheon Corporation, October 11-13, 2001, Dallas, Texas.
 - 16) "Design Through Failure Analysis", Raytheon Corporation, March, 20-22, 2000, Dallas, TX.
 - 17) "Design Through Failure Analysis", Raytheon Corporation, March, 17-19, 1999, Dallas, TX.
 - 18) "Failure Analysis Techniques", Raytheon Corporation, Nov. 7-8, 1998 Dallas, Texas.
 - 19) "Design Through Failure Analysis", Texas Instruments, April 13-15, 1998, Dallas, Texas.
 - 20) "Design Through Failure Analysis", Texas Instruments, Sep. 7-8, Oct. 10-11, Nov. 6-7, and Dec. 10-12, 1997, Dallas, Texas.

- 21) "Materials Research Issues in Aerospace Industry," Lockheed Martin Corporation, Oct. 11, 1996, Fort Worth Texas.
- 22) "Measurement of Residual Stresses Induced by Non-uniform Cooling of Aluminum Blocks," Alcoa Technical Center, August 21-22, 1991, Alcoa Center, Pennsylvania.
- 23) "Finite Element Analysis of Avionics Microelectronics Subjected to Thermal and Vibrational Environments," General Dynamics, December 11, 1990, Fort Worth, Texas.
- 24) "Effect of Friction on the Physical Modeling of Metal Forming Processes," ASME Winter Annual Meeting, November 25-30, 1990, Dallas, Texas.
- 25) "Finite Element Analysis of Avionics Microelectronics Subjected to Thermal and Vibrational Environments," General Dynamics, September 24, 1990, Fort Worth, Texas.
- 26) "Residual Stress Analysis via Experimental, Physical Modeling and Finite Element Techniques," Alcoa Technical Center, June 17-18, 1990, Alcoa Center, Pennsylvania.
- 27) "Current Research Activities in Residual Stress Analysis and Experimental Mechanics at Texas Tech University," Alcoa Technical Center, May 9-10, 1989, Alcoa Center, Pennsylvania.
- 28) "Analytical and Experimental Measurement of Residual Stresses in Nuclear Fuel Cladding," Pratt & Whitney Research and Development Center, United Technologies, July 11-12, 1987, West Palm Beach, Florida.
- 29) "Effective Computer Modeling and Experimental Measurement of Residual Stresses," Shell Oil Company, Westhallow Research Center, August 14-15, 1987, Houston, Texas.
- 30) "On the Applicability of the Finite Element Methods to the Simulation of Metal Forming Processes," Inland Steel Inc., Research & Development Division, November 17-18, 1987, West Chicago, Indiana.